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Date: July 23, 2003

By:

Kay L. Gaviglio

PATENT
Docket No. GC538-D1

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of)	
)	
Boston et al.)	Group Art Unit: Unassigned
)	
Serial No.: Unassigned)	Examiner: Unassigned
)	
Filed: Herewith)	
)	
For: Method for Producing Ascorbic)	
Acid Intermediates)	

Information Disclosure Statement

Mail Stop Patent Application
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Applicants submit herewith patents, publications or other information (listed on the attached Form PTO-1449 and attached thereto) of which they are aware, that they believe may be material to the examination of this application and in respect of which there may be a duty to disclose in accordance with 37 CFR §1.56.

This Information Disclosure Statement:

- (a) ☒ accompanies the new patent application submitted herewith. 37 CFR §1.97(a).
- (b) ☐ is filed within three months after the filing date of the application or within three months after the date of entry into the national stage of a PCT application as set forth in 37 CFR §1.491.
- (c) ☐ as far as is known to the undersigned, is filed before the mailing date of a first Office Action on the merits.
- (d) ☐ is filed after the first Office Action and more than three months after the application filing date or PCT national stage date of entry filing but, as far

as is known to the undersigned, prior to the mailing date of either a final rejection or a notice of allowance, whichever occurs first, and is accompanied by either the fee (\$180.00) set forth in 37 CFR §1.17(p) or a certification as specified in 37 CFR §1.97(e), as checked below. Authorization to charge Deposit Account No. 07-1048 in the amount of \$180.00 to cover the cost of this Information Disclosure Statement is provided in the Transmittal Letter submitted herewith in duplicate.

(e) ☐ is filed after the mailing date of either a final rejection or a notice of allowance, whichever occurred first, and is accompanied by authorization (in the Transmittal Letter submitted herewith in duplicate) to charge Deposit Account No. 07-1048 the fee (\$180.00) set forth in 37 CFR §1.17(l)(1) and a certification as specified in 37 CFR §1.97(e), as checked below. **This document is to be considered as a petition requesting consideration of the Supplemental Information Disclosure Statement.**

[If either of boxes (d) or (e) is checked above, the following "certification" under 37 CFR §1.97(e) may need to be completed.] The undersigned certifies that:

☐ Each item of information contained in the Information Disclosure Statement was cited in a communication mailed from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this Information Disclosure Statement.

☐ No item of information contained in this Information Disclosure Statement was cited in a communication mailed from a foreign patent office in a counterpart foreign application or, to the knowledge of the undersigned after making reasonable inquiry, was known to any individual designated in 37 CFR §1.56(c) more than three months prior to the filing of this Information Disclosure Statement.

Those patent(s) or publication(s) which are marked with an asterisk (*) on the attached Form PTO-1449 are not supplied because they were previously cited by or submitted to the Office in a prior application, Serial No. 09/218,700 filed December 28, 1998, and relied upon in this application for an earlier filing date under 35 USC 120.

A concise explanation of relevance of the items listed on PTO-1449 is:

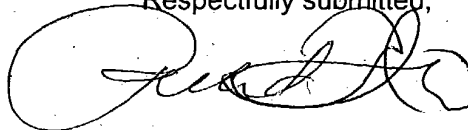
- ☒ not given
- ☐ given for each listed item
- ☐ given for only non-English language listed item(s)
- ☐ in the form of an English language copy of a Search Report from a foreign patent office, issued in a counterpart application, which refers to the relevant portions of the references.

The Examiner is reminded that a "concise explanation of the relevance" of the submitted prior art "may be nothing more than identification of the particular figure or paragraph of the patent or publication which has some relation to the claimed invention." MPEP §609.

While the information and references disclosed in this Information Disclosure Statement may be "material" pursuant to 37 CFR §1.56, it is not intended to constitute an admission that any patent, publication or other information referred to therein is "prior art" for this invention unless specifically designated as such.

In accordance with 37 CFR §1.97(b), the filing of this Information Disclosure Statement shall not be construed to mean that a search has been made or that no other material information as defined in 37 CFR §1.56(a) exists. It is submitted that the Information Disclosure Statement is in compliance with 37 CFR §1.98 and MPEP §609 and the Examiner is respectfully requested to consider the listed references.

Respectfully submitted,



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Date: July 23, 2003

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INFORMATION DISCLOSURE CITATION

Attorney Docket No.: GC538-D1	Serial No.: Unassigned
Applicant: Boston, Matthew Grant, et al.	
Filing Date: Herewith	Group: Unassigned
Page 1 of 2	Date of this Submission: July 23, 2003

US PATENT DOCUMENTS

Examiner's	Document				Sub-	Filing
Initial	Number	Date	Name	Class	Class	Date
	3,790,444 *	02/05/74	Shunichiroi et al			
	4,757,012 *	07/12/88	Estell et al.			
	4,758,514 *	07/19/88	Light et al.			
	4,945,052 *	7/31/90	Hardy et al.			
	5,004,690 *	04/02/91	Light et al.			
	5,008,193 *	04/16/91	Anderson et al.			
	5,032,514 *	7/16/91	Anderson et al.			
	5,240,843 *	08/31/93	Gibson et al.			
	5,376,544 *	12/27/94	Lazarus et al.			
	5,583,025 *	12/10/96	Lazarus et al.			
	5,795,761 *	08/18/98	Powers et al.			

FOREIGN PATENT DOCUMENTS

Examiner's	Document				Sub-	Translation
Initials	Number	Date	Country	Class	Class	Yes/No
	0 132 557 *	10/10/90	EP			N
	EP 0046284A *	2/24/82	EP			
	EP 0088409A *	9/14/83	EP			
	EP 0292303A *	11/23/88	EP			
	WO 94/05772A *	3/17/94	PCT			

OTHER DOCUMENTS

Examiner's	
Initials	Author, Title, Date, Pertinent Pages, etc.
	Aiguo et al., "Synthesis of a 2-keto-L-gulonic Acid from Gluconic Acid by Co-immobilized <i>Gluconobacter Oxydans</i> and <i>Corybacterium sp.</i> ," <i>Biotechnology Letters</i> , Vol. 20, No. 10, pp. 939-942 (1998)
	Bovara et al., "A New Enzymatic Route to the Synthesis of 12-Ketoursodeoxycholic Acid," <i>Biotechnology Letters</i> , Vol. 18, No. 3, pp.305-308 (1996)
	Bowen et al., "Redox Enzymes in Industrial Fine Chemical Synthesis," <i>Chemistry and Industry</i> , pp. 323- 326, 20 May 1985
	Bui Nguyen, "Application of high-performance liquid chromatography to the separation of ascorbic acid from isoascorbic acid," <i>J. Chrom.</i> , 196:163-165 1980
	Bunton et al., "The Determination of Ascorbic and Erythorbic Acids in Meat Products," <i>J. Assoc. Pub. Analysts</i> , 17:105-110 1979
	Candau et al., "In vivo channeling of substrates in an enzyme aggregate for β -carotene biosynthesis," <i>Proc. Natl. Acad. Sci. USA</i> , V. 88 pp. 4936-4940, June 1991
	Frey et al., "The Molecular biology of IncQ plasmids. In: Thomas (Ed.), <i>Promiscuous Plasmids of Gram Negative Bacteria</i> , Academic Press, London, pp. 79-94, 1989
	Frey et al., "Replication and copy number control of the broad-host-range plasmid RSF1010", <i>Gene</i> , 113 (1992) 101-106

Examiner	Date Considered
<p>Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.</p>	
PTO-1449	

INFORMATION DISCLOSURE CITATION

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OTHER DOCUMENTS

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Initials	Author, Title, Date, Pertinent Pages, etc.
	Grindley et al., "Conversion of Glucose to 2-Keto-L-Gulonate, an Intermediate in L-Ascorbate Synthesis, by a Recombinant Strain of <i>Erwinia citreus</i> ," <i>Applied and Environmental Microbiology</i> 54(7): 1770-1775 1988
	Hummel, Werner, "Enzyme-Catalyzed Synthesis of Optically Pure (+)-Phenylethanol," <i>Biotechnology Letters</i> , V. 12 (6) pp. 403-408 (1990)
	Ikemi et al., "The Membrane Bioreactor with Coenzyme Recycling System," <i>Journal of Biotechnology</i> 14, pp. 211-220 (1990)
	Izumi et al., "NADH Production from NAD ⁺ using a Formate Dehydrogenase System with Cells of a Methanol-Utilizing Bacterium," <i>J. Ferment. Technol.</i> 61:2 (1983) pp.135-142
	Kise et al., "Two-Phase System Membrane Reactor with Cofactor Recycling," <i>Journal of Biotechnology</i> 14, pp. 221-228 (1990)
	Kragl et al., "Continuous Production of L-tert-leucine in Series of Two Enzyme Membrane Reactors," <i>Bioprocessing Engineering</i> 14, pp. 291-297 (1996)
	Kulbe et al., "Enzyme-Catalyzed Production of Mannitol and Gluconic Acid," <i>Annals of the New York Academy of Sciences</i> , Volume 506, 1987, pp 552-568
	Matsuno et al., "Large-Scale Production of Chiral Alcohols with High Enantiomeric Excess Through Yeast-Mediated Asymmetric Reduction of Prochiral Ketones," <i>Enzyme Engineering XII</i> , Eds. Legoy et al. New York: New York Academy of Sciences, pp. 473-476 1995
	McIntire et al. "Identification of the covalently bound flavins of D-bluconate dehydrogenases from <i>Pseudomonas aeruginosa</i> and <i>Pseudomonas fluorescens</i> and of 2-keto-D-gluconate dehydrogenase from <i>Gluconobacter melanogenus</i> ," <i>Biochem. J.</i> (1985) 231, 651-654)
	Matsushita et al., "Membrane-Bound D-Gluconate Dehydrogenase from <i>Pseudomonas aeruginosa</i> ," 1979, <i>J. Biochem.</i> 85:1173-1181
	Neijssel et al., "Physiological Significance and Bioenergetic Aspects of Glucose Dehydrogenase", <i>Antonie Van Leeuwenhoek</i> , vol 56, 51-61, 1989
	Nidetzky et al., "Carry Out Coenzyme Conversions Economically," <i>Chemtech</i> , pp. 31-36 (January 1996)
	Nidetzky et al., "Improved Operational Stability of Cell-Free Glucose-Fructose Oxidoreductase from <i>Zymonas mobilis</i> for the Efficient Synthesis of Sorbitol and Gluconic Acid in a Continuous Ultrafiltration Membrane Reactor," 1997 John Wiley & Sons, pp. 624-629
	Obon et al., "Continuous Retention of Native NADP(H) in an Enzyme Membrane Reactor for Gluconate and Glutamate Production," <i>Journal of Biotechnology</i> 50, pp. 27-36 (1996)
	Pachla et al., "Determination of Ascorbic Acid in Foodstuffs, Pharmaceuticals, and Body Fluids by Liquid Chromatography with Electrochemical Detection", <i>Analytical Chemistry</i> , vol. 48, No.2, February 1976, pp 364-367
	Pugh, "Immobilized Redox Enzymes and Their Use as Catalysts for Fine Chemical Synthesis," <i>Enzymes as Catalysts in Organic Synthesis</i> , Ed. Schneider, M.P. Dordrecht, Germany: D. Reidel Publishing Company, pp. 217-232.
	Reichstein and Grüssner, "Eine ergiebige Synthese der l-Ascorbinsäure (C-Vitamin)2) <i>Helv. Chem. Acta.</i> , 17, 311-328 (1934).
	Riva et al., "Oxidoreduction of Steroids with Immobilized Hydroxysteroid Dehydrogenases and Cofactor Regeneration," <i>Annals of the New York Academy of Sciences</i> , V. 542 (1988)
	Schmidt et al., "Multiple Steady States in a Coupled Enzyme System Represented by the Enzymatically Catalyzed Production of L-Phenylalanine," <i>Annals of the New York Academy of Sciences</i> , V. 501 1987
	Schneider et al., "Utilization by yeasts of D-glucarate, galactarate, and L-tartarate is uncommon and occurs in strains of <i>Cryptococcus</i> and <i>Trichosporan</i> ," <i>Journal canadien de Microbiologie</i> , V. 36, N. 12 December 1990
	Seelbach et al., "Nanofiltration membranes for cofactor retention in continuous enzymatic synthesis," <i>Enzyme and Microbial Technology</i> , 20:389-392, 1997
	Shinagawa et al., "2-Keto-D-gluconate Dehydrogenase from <i>Gluconobacter melanogenus</i> , Membrane-Bound, <i>Oxidation-Reduction Enzymes</i> ", <i>Methods in Enzymology</i> , vol. 89, pp 194-198, 1991
	Simons et al., "Aerobic 2-ketogluconate metabolism of <i>Klebsiella pneumoniae</i> NCTC 418 grown in chemostat culture", <i>Journal of General Microbiology</i> (1991), 137, 1479-1483
	Smith et al., Purification and characterization of glucose dehydrogenase from the thermoacidophilic archaeobacterium <i>Thermoplasma acidophilum</i> , <i>Biochem. J.</i> (1989), V.261, 973-977
	Stoshane et al., "Fermentation of Glucose by <i>Acetobacter melanogenus</i> ", <i>Biotechnology and Bioengineering</i> , vol. XIX, Pages 459-465, 1977
	Woodward et al., "In Vitro Hydrogen Production by Glucose Dehydrogenase and Hydrogenase," <i>Nature Biotechnology</i> , Vol. 14, pp. 872-874 (July 1996)
Examiner	

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